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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/979,566	06/28/2002	Alison Mary Fairhurst	1084-011969	2819
	7590	11/02/2005	EXAMINER	
Kent E Baldauf 700 Koppers Building 436 Seventh Avenue Pittsburgh, PA 15219-1818			WANG, GEORGE Y	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/979,566	Applicant(s) FAIRHURST ET AL.	
	Examiner George Y. Wang	Art Unit 2871	

AK

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-15, 20, 35-37 and 39-41 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-15, 20, 35-37 and 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because the recited "columnar" refractive index variations are indefinite and fail to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appropriate correction is required.

Note: For the purposes of examination, the Examiner treats the limitation as having refractive index variations.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 11, 15, and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto (U.S. Patent No. 6,392,726, hereinafter "Goto") in view of Jannson et al. (U.S. Patent No. 5,838,403, from hereinafter "Jannson").

4. As per claims 11 and 15, Goto discloses an LCD (fig. 5, ref. 51) incorporating a light-transmitting layer (fig. 5, ref. 55), where one side of the layer has a surface relief or texturing to eliminate or reduce reflections and forms the surface of the display which is closest to the viewer (fig. 5, ref. 12).

However, the reference fails to specifically disclose a light-transmitting material characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material.

Jannson discloses a light-transmitting layer for LCDs characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material (fig. 12, ref. 170, 180).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a light-transmitting layer characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material since one would be motivated to produce a wide range of angles that exit as well as providing a higher degree of collimation for passing light (col. 22, lines 4-36). Ultimately, this serves to provide homogenous illumination distribution in the display, increased brightness, and cost efficiency (col. 3, lines 3-51).

5. As per claim 39 and 40, Goto discloses an LCD cell (fig. 6, ref. 60A) with upper (fig. 6, ref. 63) and lower (fig. 6, ref. 62) transparent plates superimposed on a plate having a first and second body of light-transmitting material (fig. 6, ref. 13) having a planar upper face parallel with the upper and lower plates of the LCD cell and having a Fresnel-stepped or ramped lower surface, the plate being disposed between the LCD cell and a backlighting (fig. 6, ref. 11) assembly arranged to direct light towards the cell perpendicularly

However, the reference fails to specifically disclose ambient light incident on the LCD cell at an angle to the perpendicular to the upper and lower plates and passes through the cell to the plate to be reflected by a semi-reflective or transflective coating.

Jannson discloses light-transmitting material (fig. 12) with a Fresnel-stepped lower surface which is provided with a semi-reflective or transflective coating where ambient light is incident on the LCD cell at an angle to the perpendicular to the upper and lower plates and passes through the cell to the plate to be reflected by the semi-reflective coating.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have ambient light incident on the LCD cell at an angle to the perpendicular to the upper and lower plates and passes through the cell to the plate to be reflected by a semi-reflective or transflective coating since one would be motivated to produce a wide range of angles that exit as well as providing a higher degree of collimation for passing light (col. 22, lines 4-36). Ultimately, this serves to provide

homogenous illumination distribution in the display, increased brightness, and cost efficiency (col. 3, lines 3-51).

6. Claims 12-13, 20, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunjima et al. (U.S. Patent No. 5,587,816, from hereafter "Gunjima") in view of Myers (U.S. Patent No. 6,443,579, from hereafter "Myers").

Gunjima discloses an LCD, however, the reference fails to teach a light-transmitting layer (fig. 4, ref. 20, 21), where one side of the layer has a surface relief or texturing to eliminate or reduce reflections, and where the other side of the layer is stepped or ramped to form a Fresnel refracting arrangement.

Jannson discloses a light-transmitting layer (fig. 12), where one side of the layer has a surface relief or texturing to eliminate or reduce reflections, and where the other side of the layer is stepped or ramped to form a Fresnel refracting arrangement (fig. 18, ref. R).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an LCD with the incorporation of a light-transmitting layer, where one side of the layer has a surface relief or texturing, and where the other side of the layer is stepped or ramped to form a Fresnel refracting arrangement since one would be motivated to produce a wide range of angles that exit as well as providing a higher degree of collimation for passing light (col. 22, lines 4-36). Ultimately, this serves to provide homogenous illumination distribution in the display, increased brightness, and cost efficiency (col. 3, lines 3-51).

7. Claims 14, 36-37, and 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gunjima in view of Jannson and in further view of Goto.

8. As to claims 14 and 36, Gunjima, when modified by Jannson, discloses the LCD as recited above. However, the reference fails to specifically disclose individual portions or facets of the stepped or ramped side as being convexly or concavely curved.

Goto discloses an LCD with a light-transmitting layer having individual portions or facets of the stepped or ramped side as being convexly or concavely curved (fig. 1, ref. 55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have individual portions or facets of the stepped or ramped side as being convexly or concavely curved since one would be motivated to provide a lenticular lens surface by which light can not only exit but ultimately provide images with higher resolution (col. 5, lines 60-67; col. 6, lines 13-18).

9. Regarding claims 37, Gunjima, when modified by Goto, discloses the LCD device as recited above with a light-transmitting layer, however, the reference fails to specifically disclose a light-transmitting material characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material.

Jannson discloses a light-transmitting layer for LCDs characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material (fig. 12, ref. 170, 180).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a light-transmitting layer characterized by refractive index variations forming light-deviating features imparting bulk light-diffusing properties to the material since one would be motivated to produce a wide range of angles that exit as well as providing a higher degree of collimation for passing light (col. 22, lines 4-36). Ultimately, this serves to provide homogenous illumination distribution in the display, increased brightness, and cost efficiency (col. 3, lines 3-51).

10. As to claim 41, Goto and Jannson disclose the LCD cell as recited above, however, the references fail to specifically disclose a second body of light-transmitting material that is the same reflective index as the first body.

Gunjima discloses the LCD as recited above with a second body of light-transmitting material that is the same reflective index as the first body (col. 21, lines 6-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a second body of light-transmitting material that is the same reflective index as the first body since one would be motivated to provide a display with enhanced intensity of light while maintaining a wide light direction

distribution (col. 2, lines 57-67). Furthermore, such an improvement contributes to the promotion of the illuminance for direct viewing (col. 3, lines 1-3).

Response to Arguments

11. Applicant's arguments filed August 15, 2005 have been fully considered but they are not persuasive.

Applicant's main argument is that the Goto reference does not teach "a surface relief or texturing to eliminate or reduce reflections." Applicant argues that the lenticular surface is distinct from a surface that reduces or eliminates reflection from ambient light emanating from the location of a viewer. However, in response to Applicant's arguments, the functional recitation that "to eliminate or reduce reflections" has not been given patentable weight because it merely describes how the surface is to be employed but does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Even assuming that the limitation has patentable weight, Applicant misconstrues the designation to the lenticular surface (54a) as the element to which is referred to as the light-transmitting element. Instead, the rejection points to the transparent mat surface (55) on top of the lenticular surface as the light-transmitting element. As a result, Applicant's argument targeted to the lenticular surface are moot.

With regard to amended claim 15,

Applicant further argues that the Goto and Jannson references fail to specifically teach the elements disclosed in independent claims 39 and 40. Applicant

acknowledges that the Office Action relies on Fig. 6 of Goto to depict a pair of transparent plates 63 and 67 superimposed on a transparent base plate 62 and a Fresnel lens 13. However, Applicant provides a contradictory argument by asserting that the back surface of the Fresnel lens 13 has "no Fresnel lower surface."

Furthermore, Applicant argues that the Jannson reference does not remedy the alleged deficiency of Goto. However, the Jannson reference clearly teaches a light-transmitting material (fig. 12) with a Fresnel-stepped lower surface which is provided with a semi-reflective or transfective coating where ambient light is incident on the LCD cell at an angle to the perpendicular to the upper and lower plates and passes through the cell to the plate to be reflected by the semi-reflective coating to provide a higher degree of collimation for passing light (col. 22, lines 4-36) for homogenous illumination distribution in the display, increased brightness, and cost efficiency (col. 3, lines 3-51).

As a result, Applicant's arguments do not place the application in condition for allowance.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George Wang
Patent Examiner
AU 2871
October 28, 2005


ANDREW SCHECHTER
PRIMARY EXAMINER